

MagellanDentalArts

ADVANTAGE™



INSPIRED BY NATURE



DiamondCrown™
inlays, onlays, full crowns

Zero toxicity according to ADA/ANSI biological testing of dental materials

Wear resistance similar to natural tooth that prevents loss of neighboring tooth surface

100% Bisphenol A (BPA) and metal free laboratory processed composite resin

DIAMONDCROWN™ LAB TECHNICAL DATA SHEET

Clinical Indications	Prosthetic System: Metal-Free Crown & Bridge, Inlay/Onlay & Laminate-Veneer Integrated Abutment Crown Implant-Superstructure, Long-Span Alloy Base Bridge
Mode of Application	Stratification Technique: Metal-Free: Op. Dentin-Dentin-Enamel-Incisor, Metal-Base: Metal Coupler/Opaque
Mode of Cure	DiamondCrown FotoKur F/X (VLC), DiamondCrown ThermoKur F/X (Heat/Pressure)
Composition	PolyCrystalline NanoCeram
Delivery System	5g. Syringe, 3cc Vial, 7cc Vial, 7.5g Jar

PROPERTY	STD. SPEC. #	DIAMOND CROWN	ADA/ISO.... Criteria	Tooth Enamel/Dentin	Gold	Porcelain
Diametral Tensile Strength (MPa)	4049(I) / 27(A)	79	34	70	N/A	35
Biaxial Flexural Strength (MPa)	4049(I) / F394-78(T)	231	52	145	188	88
Compressive Strength (MPa)	4049(I) / 27(A)	552	N/A	303/290	166	379
Fracture Toughness (Kícsr) (MPa m ^{-1/2})	1304(T)	2.2	N/A	1.7	2.2	0.5
Cyclic Fatigue Resistance: 5Hz, 5 M cycles, 800 N	(D)	Y	-----	-----	Y	N
Catastrophic Strength (N-Newtons)		> 4,000	-----	*200/800, < 1,500	< 2,000	< 1,000
OCA - Occlusal Contact Area (MPa)	(D)	> 500	-----	*9 /31-41A/P<145	< 200	< 70
Bond Strength (MPa) / (Alloy-substrate)	(D)	35	-----	-----	-----	12-17 PFM
Wear Resistance (µm/year)	4049(I)/(C) / (D)	3	50	3-5	3-5	* wears tooth "
Water Sorption (%wt.) (µg/cm ³)	4049(I) / 27(A)	0.25	0.70	N/A	N/A	N/A
Polymerization Shrinkage (% linear)	4049(I)	0.20	N/A	-----	1.56	17
Linear Coefficient Thermal Expansion						
LCTE - (ppm) (mm/mm ³ C x 10 ⁻⁶)	(D)	15	N/A	11.4	14.2	14
Ra Profilometry: Average Surface Roughness (nm)	(D)	3	N/A	5	15	15
VHN Surface Hardness @ 3mm	4049(I) / 27(A)	110	60	210/80	80	475
Depth of Cure (mm)	4049(I) / 27(A)	5.5	2.0	N/A	N/A	N/A
Biocompatibility	10993(I) / 41(A)	Excellent	Moderate	-----	Excellent	Moderate
Cytotoxicity (%)	10993(I) / 41(A)	0	40	-----	0	25
Polishability	(D)	Very Good	N/A	Very Good	Very Good	* N/A-Glazed "
Shades (Vita)	(V)	92 Vita	N/A	-----	1	Vita
Particle Size		0.25-0.60 µm	N/A	-----	N/A	N/A
Microns (µm), Nano (nm)	(D)	(+) 7 nm				
Filler Weight (%), F _w	(D)	80.0	50.0	-----	-----	-----
Filler Volume (%), V _v	(D)	74.0	30.0	-----	-----	-----
Resin / Matrix	(D)	Crystalline - PEX	N/A	Crystalline - HA	-----	-----
[Radiopaque, (X-Ray detectable) & Fluorescent]						

DiamondCrown™ Lab Features & Benefits

STANDARDS – SPECIFICATION

ISO-4049 ~ 4049(I)
 ISO-10993 ~ 10993(I)
 ADA-27 ~ 27(A)
 ADA 41~ 41(A)
 ASTM 1304 ~ 1304(T)
 ASTM-ANSI F394-78 ~ F394-78(T)
 VITA SHADE ~ (V)
 CDA ~ (C)
 DRM ~ (D)

*A/P - Anterior/ Posterior Human Masticatory Force

- ◆ Cyclic Fatigue Resistant, High Fracture Toughness, Shock Absorbing
- ◆ Exceptional Fracture Resistance: Tensile, Shear, Compressive & Flexural.
- ◆ Wear Resistance Similar to Natural Tooth
- ◆ Easy to Augment Intraorally due to Bond-Strength, 27 MPa
- ◆ Ideal for Occlusal Rehabilitation Gnathology (TMJ Syndrome, Bruxers)
- ◆ Allows for Immediate Loading of Integrated Implant Permanent Crown Superstructures and Accelerated Osseo-integration due to Tough, Ductile, Shock-Absorbing Characteristics which Dissipates Masticatory Energy.
- ◆ Ultimate Reinforcement and Handling Characteristics
- ◆ Thixotropic(Shape-Memory, Anti-Slumping Properties) Easy to Model, Carve, Shape and Anatomically Contour
- ◆ Modeling Liquid, Ceramo Coupler & Metal Coupler Facilitates/Diversifies Application Modalities
- ◆ Superb Color Stability and Accurate Shade Match
- ◆ Wide Spectrum of Colors(92): Vita A1-D4 Metal Opaques(17), Op. Dentin(16), Dentin(16), Enamel(16), Incisor(6), Dentin Chroma Modifiers(4), Dentin Color Intensifiers(10), Neutral SuperWhite (5) - XXL, XL,L,M,OP, Glaze(1), SuperClear-Coat(1)
- ◆ Refractive-Index: Chameleon-Like Effect, Specular Reflectance, Gloss & Luster Value
- ◆ Ultimate Longevity, Negligible Sorption, Absence of Solubility
- ◆ Excellent Marginal Integrity, Low Shrinkage
- ◆ Breakthrough Metal Coupling Chemistry Produces Stable Bond to Nickel, Chrome, Gold, Palladium, Zirconium & Titanium
- ◆ Biocompatible & Non-Cytotoxic

DiamondCrown™ is a unique biomimetic micro-crystalline PEX based system, unlike BisGMA and UDMA systems, which are amorphous in structure and inherently brittle. The crystalline structure of all Diamond products offers properties similar to tooth such as macro-toughness and micro-elasticity with wear rate similar to natural tooth.

“Biocompatibility of the entire range - DiamondCrown, DiamondLite, DiamondBond and DiamondLink has been tested according to ADA/ANSI recommendations for biological evaluation of dental materials (ref: Document # 41). All Diamond products scored an excellent zero rating and were found to be non reactive and non cytotoxic. This is contrast to many commercially available dental materials. The scale used by ADA/ANSI in biological testing is 0 to 5: where 5 is toxic less than 2 is considered acceptable. ZERO shows no sign of cytotoxicity or reactivity and is rated excellent.

DiamondCrown, DiamondLite, DiamondBond and DiamondLink do not contain any cytotoxic-metallic ion constituents, any evaporable methacrylic acid constituents or any chemistry that yields mucous membrane irritation, fibroblasts changes, epithelial changes, microabscess formation, lysis or haemolytic behaviour. This is in contrast to many other commonly used dental restoratives.”
 from BIODENT

